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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,714	12/05/2003	Ju-hyung Kim	SDIYPL.340AUS	6907
20995	7590	10/27/2010	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			WALKER, KEITH D	
2040 MAIN STREET				
FOURTEENTH FLOOR			ART UNIT	PAPER NUMBER
IRVINE, CA 92614			1726	
			NOTIFICATION DATE	DELIVERY MODE
			10/27/2010	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JU-HYUNG KIM and UN-SICK PARK

Appeal 2009-014445
Application 10/727,714
Technology Center 1700

Before ADRIENE LEPIANE HANLON, CHARLES F. WARREN,
and CATHERINE Q. TIMM, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL¹

I. STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision to reject claims 12, 15-17, 20, 27, 28, and 35-38 under 35 U.S.C. § 103(a) as obvious over Watanabe (U.S. Patent No. 6,492,058 B1; issued

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

Dec. 10, 2002) in view of Morishita (U.S. Patent No. 5,976,729; issued Nov. 2, 1999) and Pedicini (U.S. Patent No. 6,188,909; issued Feb. 23, 1993).

We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Appellants' invention relates to a lithium secondary battery having an improved electrical connection structure between a protector (safety device) and a can (Spec. ¶ [0001]). Lithium secondary batteries usually include a generation element placed within a can made of aluminum or aluminum alloy (Spec. ¶ [0004]). As a safety measure to prevent rupture due to short-circuiting or overcharging, the lithium secondary battery is usually electrically connected to a safety device (also called a protector), such as a positive temperature coefficient (PTC) element, a thermal fuse, or a protecting circuit (Spec. ¶ [0005]). In the prior art, the electrical connection between the protector and can was established by welding a nickel-based lead (nickel, nickel alloy, or nickel-plated stainless steel) to the can (Spec. ¶ [0006]). Appellants use a lead including two layers, e.g., a layer of nickel and a clad layer of aluminum (Spec. ¶ [0013]). Claim 12 is illustrative of the invention on appeal:

12. A lithium battery comprising:

a generation element which generates electrical power;

a can to house the generation element, the can including first and second surfaces, the first surface including a first terminal electrically connected to the generation element and the second surface including a second terminal electrically connected to the generation element;

an output lead, made of a first material or an alloy thereof, electrically coupled to the second terminal;

a first lead, electrically coupled to the first terminal, including a layer of the first material or an alloy thereof and a cladding layer made of a second material or an alloy thereof; and

a safety device that is electrically coupled to both the output lead and the first lead, the safety device comprising:

a portion of the first lead where the cladding layer of the first lead is connected to the can,

a positive temperature coefficient (PTC) element, adjacent to the portion of the first lead such that the PTC element is separated from the can by the portion of the first lead, to interrupt a current between the output lead and the first lead upon a temperature and/or a voltage increase in the can, and

an extension of the first material or an alloy thereof of the output lead adjacent to the PTC element.

II. DISPOSITIVE ISSUES

Appellants argue the claims as a group focusing on limitations found in both of the independent claims 12 and 38. We select claim 12 as representative for deciding the issue on appeal.

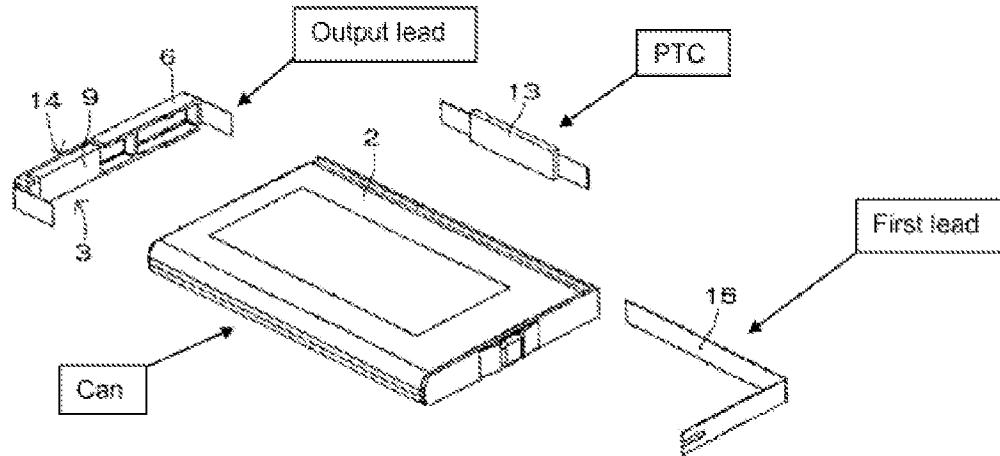
The issues are:

A. Does the evidence support the Examiner's interpretation of the claimed first lead as encompassing the combination of the lead plate 2 and lead 5 of Morishita?

B. Does the evidence support the Examiner's conclusion that, based on knowledge within the skill in the art, it would have been obvious to one of ordinary skill in the art to have located the PTC away from the battery can?

We answer these questions in the affirmative.

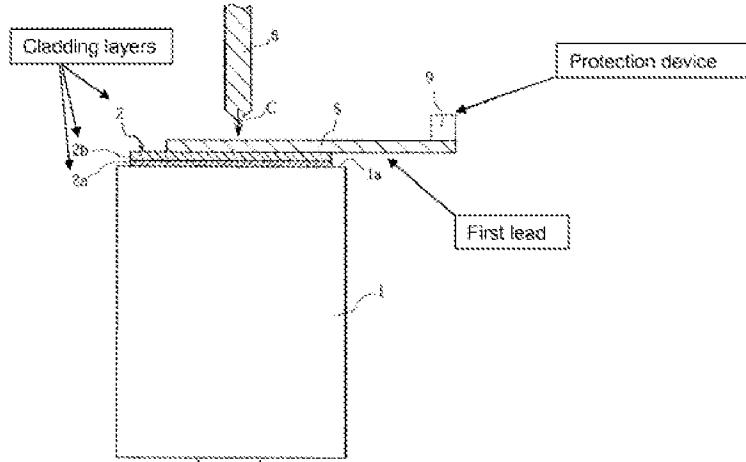
The Examiner's reproduction of Figure 10 of Watanabe and Figure 7 of Morishita are helpful for understanding the position of the Examiner. The Figure 10 of Watanabe with the Examiner's labels is reproduced below:



Watanabe Figure 10

Fig. 10 is an exploded oblique view of an embodiment of Watanabe's battery pack showing PTC 13 whose leads are to be attached: (1) to the lead of package unit 9 (Examiner's output lead); and (2) to lead 15 (Examiner's first lead) (Ans. 8; Watanabe, col. 4, ll. 3-5 and col. 8, l. 66 to col. 9, l. 5).

Figure 7 of Morishita with the Examiner's labels is reproduced below:



Morishita Figure 7

Figure 7 of Morishita shows a cross section of a lithium ion cell with can 1. Figure 7 shows the welding of lead 5 onto lead plate 2 by electrode 6.

Appellants contend that the lead plate of Morishita is not a lead (Br. 5). However, the Examiner responds that the term “first lead” as claimed is only a reference term used to describe an electrically conductive material that electrically connects a battery terminal, in this case, to one side of a PTC device (Ans. 10). Appellants do not dispute this finding of the Examiner (*see generally* Reply Br.).

The Examiner finds that Morishita’s combination of lead plate 2 and lead 5 meets the requirement of a “a first lead, electrically coupled to the first terminal, including a layer of the first material or an alloy thereof and a cladding layer made of a second material or an alloy thereof; . . . a portion of the first lead where the cladding layer of the first lead is connected to the can” as required by independent claims 12 and 38 (Ans. 9-10).

As found by the Examiner, the combination of lead plate 2 and lead 5 electrically connects the PTC to the battery terminal as required by the “first

lead” and has the structure required by the claim. The weight of the evidence supports the Examiner’s interpretation of the claimed first lead as encompassing the combination of the lead plate 2 and lead 5 of Morishita. Therefore, we cannot agree with Appellants that Morishita fails to describe the claimed first lead.

With regard to the question of whether it would have been obvious to separate the PTC from the can, the Examiner acknowledges that Watanabe does not teach the claimed separation, but the Examiner provides a reason why the claimed separation would have been obvious to one of ordinary skill in the art (Ans. 11-12). Appellants respond that the Examiner does not provide a credible reason. However, Appellants do not discuss in any detail why the reason provided by the Examiner on pages 11-12 of the Examiner’s Answer is not credible (Reply Br. 4).

Watanabe teaches disposing the PTC device 13 so it contacts the battery can surface (Watanabe, col. 8, ll. 44-45; Fig. 2). However, as pointed out by the Examiner, Watanabe teaches that the PTC functions by reacting to the heat output by the battery (Ans. 12). According to Watanabe, the resistance of the PTC device rapidly increases when the battery temperature climbs to a prescribed temperature and when the battery temperature becomes abnormally high, current flow in the PTC becomes negligible such that the current is effectively cut off (Watanabe, col. 8, ll. 45-49).

We cannot agree with Appellants’ statement that the Examiner has not provided a credible reason. It would have been understood by one of ordinary skill in the art that whether the PTC is directly in contact with the

surface of the can or is separated by the lead, the PTC would still be subject to the heat of the overheating battery and would react in a predictable manner in accordance with its function. Appellants offer no evidence to the contrary (Reply Br. 4). The evidence supports the Examiner's conclusion that, based on knowledge within the skill in the art, it would have been obvious to one of ordinary skill in the art to have located the PTC away from the battery can, the combination being no more than the predictable use of prior art elements according to their established functions.

III. CONCLUSION

On the record before us, we sustain the rejection maintained by the Examiner.

IV. DECISION

The decision of the Examiner is affirmed.

V. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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